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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/381,588	09/20/1999	STEVEN JAMES SHATTIL	022950PCTUS	4149

7590 01/19/2005  
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EXAMINER

BURD, KEVIN MICHAEL

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 01/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/381,588

Applicant(s)

SHATTIL, STEVEN JAMES

Examiner

Kevin M. Burd

Art Unit

2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 19 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 44-136 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 44-81, 89-95, 100, 110, 112-115, 117-120, 125 and 135 is/are allowed.
- 6) ☒ Claim(s) 82, 87, 88, 96-99, 101-109, 111, 116, 121-124, 126-134 and 136 is/are rejected.
- 7) ☒ Claim(s) 83-86 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

1. This office action, in response to the remarks filed 9/19/2004, is a non-final office action.

***Response to Arguments***

2. Applicant's arguments with respect to claims 44-81, 83-86, 89, 112-117 and 124 have been fully considered and are persuasive. The rejections of these claims have been withdrawn.

3. Applicant's arguments filed 9/19/2004, regarding claims 82, 87, 88, 96-99, 101, 116, 121-124 and 126 have been fully considered but they are not persuasive.

Regarding claim 82, Tomisato discloses a receiver for receiving a communication signal comprising a plurality of carrier signals having a plurality of frequencies and modulating the carrier signals with at least one information signals (figure 16 and column 15, lines 55-60). The carriers are different and each having a phase offset (figure 2) and produce pulses that are "substantially orthogonal in time" (figure 12(a) - 12(d)). The received signals are combined as shown in figure 20. Tomisato states because the carrier phase is coherent for each chip, the chips can be encoded, transmitted then decoded at the receiver side (column 3, lines 42-47).

Regarding claim 96, an error correcting code is used to compensate for the errors caused by the channel (column 4, lines 32-36). Figure 3 shows the "mapping" of the multi-carrier signal at instants in time.

Regarding claim 97, the signal is received and has a certain bandwidth. Pulses are generated from a superposition of selected multi-carrier frequency carriers. This is a demodulating stage. The information symbols are estimated after demodulation and decoding to recover the originally transmitted pulses shown in figure 8.

Regarding claims 98, 99 and 101, figure 9 shows the filer, combiner and decision device. The combiner outputs a modulate pulse waveform and the decision device generates the information symbols that are estimated after demodulation and decoding to recover the originally transmitted pulses shown in figure 8.

Claims 87, 88, 116, 121-124 and 126 are rejected for the reasons stated in the previous office action.

4. Applicant's arguments with respect to the rejections of claims 102-109, 111, 127-134 and 136 under 35 USC 102(b), 35 USC 102 (e) and 103(a) have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, new grounds of rejection are made in view of the prior art disclosed below.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 82, 87, 96-99, 101, 116, 121-124 and 126 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomisato et al (US 5,504,783).

Regarding claims 82, 96, 97 and 101, Tomisato discloses a method of receiving a communication signal comprising a plurality of carrier signals having a plurality of frequencies and modulating the carrier signals with at least one information signal (figure 16 and column 15, lines 55-60). The carriers are different and each having a phase offset (figure 2) and produce pulses that are "substantially orthogonal in time" (figure 12(a) - 12(d)). The received signals are combined as shown in figure 20.

Regarding claim 87, figure 20 discloses the receiver's system for weighting the received signals.

Regarding claims 98 and 99, Tomisato discloses a method of receiving a communication signal comprising a plurality of carrier signals having a plurality of frequencies and modulating the carrier signals with at least one information signal (figure 16 and column 15, lines 55-60). The received signals are input to the filters 253. The carriers are different and each having a phase offset (figure 2) and produce pulses that are "substantially orthogonal in time" (figure 12(a) - 12(d)). The received signals are combined as shown in figure 20. A decision device 86 is coupled to the combiner 85.

Regarding claims 116, 121-124 and 126, the carriers are provided for frequency hopping (column 8, lines 38-47).

6. Claims 102-109, 111, 127-134 and 136 are rejected under 35 U.S.C. 102(b) as being anticipated by Posner et al (US 5,249,201).

Regarding claims 102-104, Posner discloses a method of generating a multi-carrier communication signal transmitted by a communication device. Figure 6a shows a duration modulated pulse train (column 4, lines 67-68). Multiple carrier signals are used in the transmission (title). Data to be transmitted is received and data is mapped to the pulse trains. The pulse trains are staggered in time by one pulse period. The carrier signal is modulated by the pulse train and amplified and the result is combined to produce the output signal (column 4, lines 11-24). Figures 6a and 7a show the signal having non-zero values at certain times and zero values at other times.

Regarding claims 105-109, Posner discloses a transmitter for generating a multi-carrier communication signal transmitted by a communication device. Figure 6a shows a duration modulated pulse train (column 4, lines 67-68). Multiple carrier signals are used in the transmission (title). Data to be transmitted is received and data is mapped to the pulse trains. The pulse trains are staggered in time by one pulse period. The carrier signal is modulated by the pulse train and amplified and the result is combined to produce the output signal (column 4, lines 11-24). Figures 6a and 7a show the signal having non-zero values at certain times and zero values at other times.

Regarding claim 111, Posner discloses a transmitter for generating a multi-carrier communication signal transmitted by a communication device. Figure 6a shows a duration modulated pulse train (column 4, lines 67-68). Multiple carrier signals are used in the transmission (title). Data to be transmitted is received and data is mapped to the

pulse trains. The pulse trains are staggered in time by one pulse period. The carrier signal is modulated by the pulse train and amplified and the result is combined to produce the output signal (column 4, lines 11-24). Figures 6a and 7a show the signal having non-zero values at certain times and zero values at other times. The pulses shown in the figures are orthogonal in time.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 88 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomisato et al (US 5,504,783) in view of Odenwalder (US 2002/0009096).

Regarding claims 88, Tomisato discloses a receiver having a receiving element for receiving a plurality of carrier signals as stated in paragraph 3. Tomisato does not disclose the use of adjusting the gain of the receiver to compensate for fading. Odenwalder discloses adjusting the gain of the receiving system (paragraph 0041). Odenwalder states, in paragraph 0040, it is advantageous to adjust the gain to increase the high transmission capability and to allow the transmission to adapt to changing radio channel conditions. For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to utilize the adaptive gain adjustments of Odenwalder in the receiver of Tomisato.

8. Claims 127-134 and 136 are rejected under 35 U.S.C. 103(a) as being unpatentable over Posner et al (US 5,249,201).

Regarding claims 127-134 and 136, Posner discloses the communication system and method of using the system as disclosed above in paragraph 5. Posner does not disclose the system is a frequency hopping system. However, it is well known in the art spread spectrum communications, that frequency hopping systems are useful in communicating large amounts of data with few errors. By hopping frequencies, interference is less likely to corrupt a large amount of data since the system will only transmit on one frequency (or hop) for a limited period of time. Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to utilize frequency hopping in the system of Posner for the reason stated above.

***Allowable Subject Matter***

5. Claims 44-81, 89, 90-95, 100, 110, 112-115, 117-120, 125 and 135 are allowed.
6. Claims 83-86 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Thursday 9 am - 5 pm.



If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kevin M. Burd  
1/18/2005

**KEVIN BURD**  
**PRIMARY EXAMINER**